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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,778	10/11/2001	Luc Ouellet	12251-US	7550
23553	7590	02/19/2004		
MARKS & CLERK P.O. BOX 957 STATION B OTTAWA, ON K1P 5S7 CANADA			EXAMINER HOFFMANN, JOHN M	
			ART UNIT	PAPER NUMBER
			1731	
DATE MAILED: 02/19/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b> 09/973,778	<b>Applicant(s)</b> OUELLET ET AL.	
	<b>Examiner</b> John Hoffmann	<b>Art Unit</b> 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                       |                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____                                                |

### ***Specification***

The disclosure is objected to because of the following informalities: There are various blank spots, for example, page 8, line17.

Appropriate correction is required.

### ***Claim Objections***

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 6-30 been renumbered 7-31.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-17, 19-25, 27, 29, and 31 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention

Claims 15-16: there is no antecedent basis for "said inert gas".

Claims 16-17 there is no antecedent basis for "the flow rate".

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Claim 19: there is no antecedent basis for "the same form". Furthermore, it is unclear how the form of a profile is the same or different from a profile itself.

Claim 20: it is unclear if the line 1 deposition refers to either of the depositing steps of claim 1, or both, or if it can refer to a third depositing. Also there is no antecedent basis for "the flow rates", "the total deposition pressure", the observed FTIR characteristics", "the resulting product", and "the post deposition thermal treatment temperature. The term FTIR is indefinite as to its meaning: this acronym is not definite in the specification. It is unclear if the "group" of line 5 is closed or open: groups are typically indicates as being "consisting of" various members, or "comprised of."

Claim 21 the various flows lack antecedent basis, for example: "the N2 flow".

Various claims lack antecedent basis due to the renumbering of the claims. For example, claim 23 depends from claim 21 which does not have any buffer layer.

Applicant is required to find and fix all such problems.

It is unclear what the difference is between a face and side. Namely, can a back side also be a front face? Claim 24: there is no antecedent basis for "the back face of the buffer layer"

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Ojha 5979188.

Claim 1 does not recite any order to the steps, except for the last step. Ojha discloses depositing a first silica film by PECVD, followed by another silica film, (col. 1, line 66 to col. 2, line 7), followed by a first heat treatment (col. 1, lines 8-10), and subsequently subjecting the wafer to a second heat treatment (col. 1, lines 12-17). As to the limitation "to reduce optical absorption, wafer warp, and compressive stress". Such is an intention/purpose which does not require any additional stress. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Claim 2: col. 2, lines 40-44.

Claim 26 is clearly met. "thick" is a relative term which is not defined/limited by the specification.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-8, 12, 14-15, 17-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojha.

Ojha does not disclose the specifics of claim 3. It would have been obvious to have the first heat treatment start out at a stabilized temperature (such as room temperature, or the PECVD temperature) because there is no indication the temperature should be fluctuating, and because it is easier to have something at the temperature of its surroundings, than to keep changing it. IT would have been further obvious to repeat the Ojha process on an automatic basis, wherein all of the steps are identical for each batch, (i.e. that they are predetermined by the setting up of the process). The motivation for this is: to make lots of waveguides which are all identical, and because it would be cheaper to have it done automatically, than manually. It would have been obvious to stabilize the wafer to room temperature when finished. Also see col. 4, lines 56-60 which indicates a first starting temperature.

Claims 4-5: it would have been obvious to have the wafer at the starting temperature for as long or as short as one desires - depending upon how quick the transition is from the forming to the annealing.

Claim 8: see col 4, line 60.

Claim 12: see col. 4, lines 36-37.

Claim 14: see col. 3, line 41.

Claim 15: Col. 3, line 41 discloses using an inert gas, but there is no disclosure of nitrogen, it would have been obvious to use nitrogen because it relatively inexpensive: air is over 70% nitrogen.

Claim 17: it would have been obvious to use a flow of inert gas so as to remove the hydrogen that the Ojha process removes. As to the specific value: such would have been obvious depending upon how many wafers are being processed in a batch. It is noted that 1 liter/minute for one wafer would likely produce different results as compared to using the same 1 l/min for 1000 wafers.

Claims 18-19 would have been obvious for the same manner claim 3 was.

Claim 21: the claim does not require the specific flows: therefore it is deemed that claim 21 is interpreted as "if there is an  $\text{SiH}_4$  flow, then it is fixed at..." Since Ojha does not have any of those flows, the "if..." condition is not met, and therefore the "then it is fixed..." limitation is not required.

As to the language: "is varied among the following choices" has never been interpreted by the courts (to the best of Examiner's knowledge), nor has any similar language. It is deemed the that the broadest reasonable interpretation is that it is a group which comprises the listed members. (A group which consists of the members is also a reasonable interpretation, but it is narrower in scope). Therefore the claimed group is open to having other members such as: 30 to 300 seconds at from 840 to 930 C. Ojha meets this: col. 2, lines 42-43.

Claims 23-24 : see col. 3, lines 62-65.

Claim 22 is clearly met.

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Claim 28 does not require any step. Note claim 26 has explicit steps: depositing, subjecting, etc. Rather claim 28 only states what "is". Further it states that the sacrificial layer is removed - i.e. it no longer is part of the wafer. Thus it is deemed that any of the claim 28 layers can be removed. When one looks at the starting Ojha, one cannot tell whether it is one where there "is" various removed layers which is removed. Thus it is deemed that there is no structural limitations as to what "is" on the wafer.

Likewise, claims 24-25, 27 and 29-31 merely state what is - there is no step of depositing, deep-etching or the like. In as much as applicant has set forth that something that "is" need not remain throughout the process (see claim 28, lines 3-4). The prior art need not have something. One cannot tell by looking at the Ojha method whether the wafer was one where all of the "is" things had occurred. There has to be some manipulative difference between the claims and the prior art.

Claims 6-7 and 10: the claims do not specify the temperature of what. It is deemed such can be the temperature of the furnace. Ojha does not disclose how the furnace is heated to its operating temperatures. It would have been obvious to not heat the furnace too quickly, otherwise it could experience thermal shock and spalling. The ramp rate would have been an obvious matter of design choice. The same when shutting off the apparatus - it would have been obvious to ramp it down at any desired speed that is not too fast so as to cause thermal shock.

Claim 20: examiner is only aware of 3 dimensions: 4 if time is a dimension. It is deemed that Ojha's process occurs in 7 dimensions in as much as Applicant's invention is. It would have been obvious to set the various parameters to be constant, because if



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they vary, one would get varying products. The temperature would be inherently predetermined by the artisan, either explicitly or by accident. As to the observed characteristics: it is deemed that this is to be interpreted as: "if there are observed FTIR characteristics, then...." Ojha does not have these characteristics, therefore the "if..." condition is not met, and the "then..." result is therefore not required.

Claims 9, 11, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojha as applied to claim 7 above, and further in view of Liu 5094984.

Ojha does not teach the PECVD temperature (i.e. the first predetermined temperature that the wafer is prior to the heating for annealing). Col. 7, lines 29-31 of Liu discloses that the preferred temperature for PECVD is 300-450: it would have been an obvious matter of design choice and/or routine experimentation to use a temperature about 400 C, since this is what is preferred.

Claim 11: see how claims 6-7 and 10 are met.

Claim 13: see col. 2, lines 40-45 of Ojha.

Claim 16: if there is any nitrogen, it would have been obvious to have it constant for at least part of the process, so as to keep all the parameters constant.

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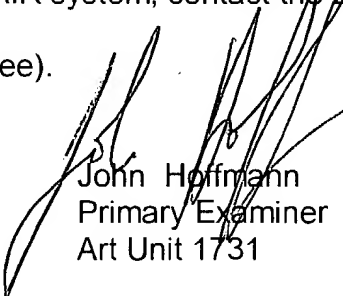
**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimoda, Bazylenko, Bhagavatula, Ojha '491, Saito, and Bloechl are cited as other evidence that at least of the claims is not obvious and/or not novel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
John Hoffmann  
Primary Examiner  
Art Unit 1731

02-12-04

jmh